



AF/GP 1713

PATENTS
2543-28-98

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of :
Duvall *et al*
Serial No. 09/098,758
Filed: June 17, 1998
For: Synergistic Blend of a Metal-Based
Stabilizer or Lewis Acid and a Free Mercaptan
for Enhanced PVC Stabilization

Group Art Unit: 1713
Examiner: P. Mulcahy

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Robert M. Didrick

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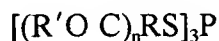
RESPONSE UNDER 37 CFR 1.116

Dear Sir:

This application has been reconsidered carefully in the light of the Office Action mailed February 27, 2001. Reconsideration of the application in the light of the following remarks is requested respectfully.

The final rejection of claims 1-3 and 6-9 under 35 USC 103(a) as being obvious over the teachings of Bae *et al* on the ground that Bae *et al* teaches the incorporation of zinc chloride and a latent mercaptan in a halogen-containing polymer composition is again traversed. The teaching at columns 7 and 8 of Bae *et al* to which the Examiner has referred describes the formation of a trithiophosphite by the reaction of phosphorus trihalide with a mercapto acid ester in which the mercapto group is bonded to the phosphorus atom. The resulting trithiophosphite, has the formula, as copied from the one at the top of column 8 of Bae *et al*, is:

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is neither a free mercaptan nor a latent mercaptan.

The mercaptans named throughout the applicants' disclosure may or may not correspond to some of the mercaptans shown in the disclosure of Bae *et al* and may or may not be capable of reacting with a phosphorus trihalide to form a trithiophosphite but that has no relevance to the question of whether Bae's teaching of the product of that reaction is suggestive of a combination of zinc chloride and a free mercaptan. The Examiner's assertion that the thiophosphite mercaptans as shown in the Bae *et al* patent would fall within the scope of the instantly claimed free mercaptans has no basis whatsoever. Bae *et al* never speaks of a thiophosphite mercaptan and it is quite uncertain what such a material might be.

The Examiner's contention that "given specific conditions such as elevated pressure and temperature, the mercaptan groups as shown in this patent would become free mercaptans." is pure speculation. He has no basis in Bae *et al* and has offered no basis in chemistry from which to draw such a conclusion. Bae *et al* makes no suggestion that the trithiophosphites will break up in any manner when used to stabilize PVC at elevated processing temperatures, let alone in such a manner that a free mercaptan would be released.

The Examiner's complaint that the applicants have not given a clear definition of what they intend to mean by "free mercaptan" is not seen as germane to the rejection under 35 USC 103(a). It is respectfully submitted that one of ordinary skill in the art knows that a free mercaptan is one that has an -SH group in which the hydrogen atom is free to react with another chemical entity. If there is a reference that truly suggests the use of a free mercaptan, as thus understood by one of ordinary skill in the art, in combination with a low level of zinc chloride, then it may afford a viable ground for rejection of the instant claims. The Examiner has not cited such a reference.

The Examiner's contention that since there is no lower limit on the amount of free mercaptan in the claimed composition, a mere trace amount of free mercaptan within the system within the system would seem to read on the instantly claimed invention is not well taken in view of the fact that the claims call for the presence of very low levels of zinc chloride as well as the mercaptan. Bae *et al* teaches against the presence of zinc chloride; the very purpose of the

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invention in Bae *et al* is to avoid the presence of zinc chloride by tying it up as a complex with a triphosphite. See columns 5 and 6 of the reference. Moreover, Bae *et al* may be seen to indicate at column 6, lines 31-36, that the free mercapto acid ester is unwanted in that it teaches the removal thereof from the trithiophosphite reaction product. Furthermore, the applicants say at page 12, lines 30-38, of the specification that the free mercaptans are employed in an amount sufficient to impart the desired resistance to heat deterioration to(sic) of halogen-containing polymers. That would be understood by a reader of the claims since the claims are construed to define an operable invention. There is nothing in the cited reference that would support the Examiner's contention that a trace amount of a free mercaptan would read on the instantly claimed invention.

For the record, the applicants have never argued that the free mercaptan used in this invention is to be liberated from a latent mercaptan. Although free mercaptans are liberated from truly latent mercaptans, the applicants have stated at page 3, lines 33-34, that the term "free mercaptan" means a mercaptan which has not been liberated from a latent mercapatan (sic) during the PVC processing."

For all of the foregoing reasons, a withdrawal of the final rejection is courteously solicited. A Change of Address form showing the address given below is enclosed.

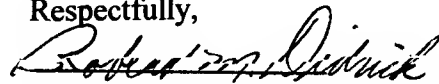
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Respectfully,



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